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WISSENSCHAFTLICHE KURZMITTEILUNGEN

A note on the sexual behaviour in red deer hind

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The following observation was made on a semi-tame socially stabilized "white" red deer population in Žehušice game reserve, Czechoslovakia. Additional details are described elsewhere (Bartoš 1981).

At the beginning of the rutting season during the autumn 1979, the alpha stag was immobilized and removed. This resulted in a big social friction among the remaining deer. The beta stag and one hind were injured and died. The top hierachy position was then occupied by a 6-year-old stag, socially and probably sexually unexperienced. The observed behaviour occurred during the first part of the rutting season. At 0900 one hind was noticed as she bounded away at great speed, merely circling and returning to the stag if he had not followed her. However, the stag showed no tendency to keep within the proximity of the hind. The hind then solicited the stag by trotting past him with her head low and

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neck extended while making a characteristic chewing action with her mouth open (comp. Guinness et al. 1971). The same posture was performed towards the approaching stag when the hind was lying. In this situation preorbital glands of both animals were open. Within 2 h the hind was seen three times running towards the stag, suddenly stopping in front of him, and returning around and running away. Her steps were shorter than usual when running. At 1125 h the hind followed by her calf left the herd to the distance of approximately 200 m. The stag tried to "herd" her back, but when she ignored him, he gave up and followed her, although the herd was immediately joined by another stag, displaying full rutting behaviour except roaring. After 30 min of standing on one place, the hind moved back followed by her calf and the stag. The stag displayed no aggressiveness towards the other male, who then left the herd. The whole herd then rested. At 1530 h the deer started to graze and the hind again became active. She repeatedly "attacked" the stag, running fastly towards him in the same manner as described above. When she stopped in front of the stag, she almost squatted, before she darted away. When she came close to the stag he made a sudden dash towards her, flicking out his tongue with head streched forwards and nose directed towards her tail. The hind invariably retreated quickly from these advances with her tail sometimes raised in the air. The stag then chased the hind approximately 20 m, after giving a series of load roars. The stag placed his chin on her rump or licked her vulva during the chases. During one of the chases the hind came to a sudden halt and stead with her back slightly arched, ears back and tail raised. The stag then mounted with penile protrusion and erection. Mounts usually lasted approximately 1 to 5 seconds, but the female avoided the male's intromission by lowering her hindquarters and running out from beneath him. Twelve mounts occurred within a 1.5 h interval. After the 13th mounting, the stag achieved intromission and after a few mild pelvic thrusts, he lunged violently upwards from his hind quarters so that his legs left the ground and his body took in an almost vertical position. The force of his ejaculatory thrust pushed the hind forwards a few steps and the stag dismounted. The hind's calf usually followed the chases of the pair and was barking, but was ignored by the hind (comp. Gallia 1966). After copulation the hind stayed in a typical postcopulatory posture (Guinness et al. 1971) for 20 s, and then went to her calf and nursed it. During the last part of the described behaviour the stag completely lost control of the herd of hinds, chasing off spikers only and ignoring adult subordinate stags. One of the other stags separated a small group of hinds, and the rest of hinds dispersed on a large space. The next morning, however, the herd was again integrated.

The described active precopulatory behaviour of the red deer hind is in a good agreement with other reports in red deer (Guinness et al. 1971; Taylor 1973), elk (Morrison 1960), chital (Schaller 1967), caribou (Bergerud 1974), and brow-antlered deer (Blakeslee et al. 1979). Yahner (1979) suggested that multiple mating bouts in muntjac are determined by the courting male. However, in red deer, during using an artificial vagina for semen collection (Krziwiński and Jaczewski 1978) the stag's ejaculation was achieved usually just seconds after the beginning of the first mounting attempt (Krziwiński 1979, pers. comm.). Hence it seems in the red deer (Lucas 1973), similary as in other Cervids as in fallow deer (Espmark and Brunner 1974), that the female determines the precopulatory pattern, as well as the choice of sexual partner (Morrison 1960; Lucas 1973; Bartoš 1981). Nevertheless, she usually chooses the dominant individual (Lincoln and Guinness 1977).

The knowledge of the female deer sexual behaviour is usually based on incidental observation only. The observed behaviour reminds a well documented precopulatory display of some female laboratory species (e. g. Madlafousek and Hliňák 1977). It is suggested that similarly as in these species there might exist plastic changeable female ability in deer, which may gradually increase the soliciting impression of the precopulatory behaviour. Also Blakeslee et al. (1979) have stated that the females of most species have

the capacity for some form of proceptive behaviour (Beach 1976) and they demonstrate the behaviour "when they must encourage more vigorous sexual behavior from a male who is inexperienced, disinterested, tired, old or lethargic". Moreover, by means of this behaviour a female may stimulate and time her internal environment for an optimal stage for insemination. The chewing action of the soliciting hind's open mouth also was observed out of rutting season. It was usually performed by a female as she approached a feeding place by a stag. This suggests a general active manifestation of submissiveness of a hind towards a stag.

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Mausschläfer *(Myomimus* Ognev, 1924) in Afghanistan

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Schädelreste kleiner Säugetiere, die ich am 10. April 1965 etwa 30 km südlich von Herat in Afghanistan vom Boden einer Höhle auflas, enthielten neben anderen Arten (Tab. 1) auch die Reste von mindestens 4 Schläfern. Als ich die von mir *Dryomys* zugeordneten Fundstücke Herrn R. Daams, Utrecht, schickte, erkannte dieser, daß es sich dabei um *Myomimus* handelte (Daams 1981). Vorhanden sind 4 rechte und 4 linke zahnlose, zum Teil beschädigte Mandibeln und je ein rechter und linker Molar, vermutlich M_2. Zwar ähneln die Unterkiefer denen von *Dryomys*, doch zeigen der kräftigere und höhere

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